Digital Container Shipping Association

Industry Blueprint – Container Shipping 1.0 Reading guide

September 2019
Industry Blueprint – Container shipping

Background & scope

Process standards for the container shipping value chain.
DCSA Program Overview

The DCSA programme consists of two parallel tracks; Data & Interface Standards and Industry Blueprint – Container Shipping.

**PURPOSE**

The purpose is to enhance efficiency across the transportation value chain, as well as enable interoperability across stakeholders by standardizing and harmonizing business IT processes. The purpose is not to build IT systems, and not to discuss topics of commercial nature.

**MEMBERS**

The Digital Container Shipping Association has five founding members: Maersk, CMA-CGM, Hapag Lloyd, MSC and ONE. DCSA has received great interest from other shipping lines which are interested in becoming members.
Industry Blueprint – Container Shipping 1.0

Selected carrier processes have been mapped to facilitate standardization and digitization throughout the industry.

PURPOSE

1. Standards support a **common view across the industry** in relation to processes, milestones, events and messages, facilitating industry standardization and digitization efforts.

2. Additionally, a clearly defined process standard is the **foundation against which future DCSA standards will be defined and mapped** (e.g. Data and Interfaces).

SCOPE

1. Processes of the Industry Blueprint are completed by the ocean carriers;

2. Processes related to the movement of a container/equipment from one location to another;

3. Processes which are linked to a shipment/booking;

4. Processes are considered critical for industry digitization and standardization efforts;

5. Processes which are **not** considered commercially sensitive or of competitive advantage;
Industry Blueprint – Container shipping

Structure

Process standards for the container shipping value chain.
A Multi-layered Industry Blueprint

The Industry Blueprint – Container Shipping 1.0 is designed as a multi-level model, where users can expand each element to achieve a higher level of detail and granularity. The following process terms (L1, L2, L3) are necessary to understand how the Industry Blueprint process maps have been designed.

<table>
<thead>
<tr>
<th>Level</th>
<th>Definition</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. E2E Process</td>
<td>End-to-end process stream. Consists of several journeys.</td>
<td>Container Shipping</td>
</tr>
<tr>
<td>2. Journey</td>
<td>A series of related processes in a timeline which allows for a goal to be accomplished.</td>
<td>Shipment Journey (Booking-to-Payment)</td>
</tr>
<tr>
<td>3. Process</td>
<td>The process is a sequence of related activities</td>
<td>Prepare Bill of Lading (B/L)</td>
</tr>
<tr>
<td>4. Activity</td>
<td>Activities are key steps within a process. An activity consists of several tasks</td>
<td>Allocate empty equipment</td>
</tr>
<tr>
<td>5. Task / Transaction</td>
<td>The steps are specific user actions or systems transactions. A step contains the guide for how to perform the task.</td>
<td>Not used (but could e.g. be &quot;Check functional requirements of the equipment&quot;)</td>
</tr>
</tbody>
</table>

Note: Unlike "usual" process models, the DCSA uses a journey approach for Level 2.
The DCSA Industry Blueprint is utilizing a "journey-based" structure.

Each journey has a specific thematic focus and they have different drivers, but they all follow the same general timeline in parallel.

The three journeys are:

- Shipment journey (Order to Payment);
- Equipment journey (Pick-up to Return);
- Vessel journey (Departure to Arrival (incl. one port call)).
Definitions for Shipment Journey, Equipment Journey and Vessel Journey are included for the Level 1: Carrier Booking-to-Container Return end-to-end process.

1. Shipment Journey
   - Booking
     - Customer driven processes (and/or triggered by the customer)
     - Process executed in relation to an agreement made, between the customer and the carrier, which is later invoiced and settled

2. Equipment Journey
   - Pick-up
     - Equipment driven processes
     - Carrier driven processes

3. Vessel Journey
   - Departure
     - Activities required to execute a port call successfully
     - Preparation of vessel arrival and follow-up post vessel departure
     - "During sea passage" is excluded from the scope of Industry Blueprint 1.0

Booking-to-Payment covers all activities and documentation processes related to a customer’s order

Pick-up-to-Return covers all activities and documentation processes directly related to containers and/or physical container movements

Departure-to-Arrival covers all activities and documentation processes related to one vessel AND the relevant port calls in relation to the transport of one shipment
Level 1 Process Depiction

Level 1 (Carrier Booking-to-Container Return), Level 2 journeys (Booking-to-Payment, Pick-up-to-Return and Departure-to-Arrival) and Level 3 processes documented within the Industry Blueprint – Container Shipping 1.0 are listed below.

**Cargo Movement**

**1. Shipment Journey**
- **Booking**
  - 1.1. Receive booking request
  - 1.2. Validate, plan and confirm booking request
  - 1.3. Prepare B/L
- **Liner operation**
  - 1.4. Release B/L
- **Post-shipping**
  - 1.5. Issue arrival notice
  - 1.6. Manage cargo release
  - 1.7. Manage shipment closing

**2. Equipment Journey**
- **Pick-up**
  - 2.1. Nominate depot and empty equipment
  - 2.2. Submit VGM
  - 2.3. Assign empty drop off
  - 2.4. Return empty equipment
  - 2.5. Prepare carrier haulage work order
  - 2.6. Monitor equipment

**3. Vessel Journey**
- **Departure**
  - 3.1. Prepare vessel load list
  - 3.2. Manage stowage plan and instructions
  - 3.3. Manage vessel reconciliation
  - 3.4. Submit customs manifest
  - 3.5. Maintain and communicate arrival and departure times

**Exception Handling**
- 4.1. Manage carrier booking change
- 4.2. Issue manifest corrector
- 4.3. Cancel existing work order*
- 4.4. Manage seal(s) removed*
- 4.5. Manage deviations identified from vessel reconciliation
- 4.6. Manage asset malfunctions*
- 4.7. Manage cargo surveys*
- 4.8. Manage re-use allocation*

* These processes have not been mapped on level 3 in the Industry Blueprint 1.0

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DCSA

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Milestone Depiction

1. Shipment Journey
   - Booking received
   - Booking confirmed
   - Shipping instructions received
   - Bill of Lading approved
   - Export payment cleared
   - Arrival notice created
   - Bill of Lading finalized
   - Arrival notice issued
   - Bill of Lading released
   - Import payment cleared
   - Bill of Lading collected
   - Cargo released
   - All equipment for shipment returned
   - All payments cleared

2. Equipment Journey
   - Empty equipment/depot allocated
   - VGM submitted
   - Full equipment loaded onto vessel
   - Empty drop-off assigned
   - Full equipment discharged from vessel
   - Full equipment at shipping location
   - Empty equipment returned

3. Vessel Journey
   - Departure
     - Manifest submitted
     - Vessel load/discharge complete
     - Vessel depart
     - Vessel import documentation cleared
     - Vessel arrived
     - Vessel berthed
   - Arrival
     - Manifest approved
     - Vessel operations complete
     - Empty equipment picked up from shipping location
     - Empty equipment dropped off
     - Empty equipment at terminal
     - Full equipment at import terminal
     - Gate out full equipment from import terminal
     - Empty equipment at stuffing location
     - Equipment stuffing complete
     - Full equipment departure from stuffing location
     - Full equipment at stuffing location
     - Empty equipment at packing location
     - Empty equipment arrived at stuffing location

- Milestone
- Event
Industry Blueprint – Container shipping

Legend

Process standards for the container shipping value chain.
The Industry Blueprint – Container Shipping 1.0 is a multi-layered end-to-end process description. Each map regardless of level of aggregation provides an overview of a specific process incl. activities, decisions, inputs/outputs and physical milestones.

Start Event
Each map is started using a Start Event. These are often specific events/occurrences, that is triggering the subsequent tasks. A start event can also be a link from a previous process.

Activities
The primary driver of processes is activities. Activities are actions performed by people or systems.

Milestones
Milestones are contained in the bottom swimlanes. The milestones have been placed to reflect the timing in relation to the above process. These are divided into milestones controlled by the carrier and those controlled by another third party.

Messages and Data Objects
Messages and Data Objects are contained in the top swimlane. These all relate to an activity, which is the trigger or recipient the information I question.

End Events
The End Event is illustrating the primary outcome or state obtained through the process. This can also be a link to an other process.

Gateway
When the sequence flow hits a gateway, a decision is made around the future sequence of the flow. One or more routes may be taken depending on the type of gateway.
Elements and Icons

The elements used in the Industry Blueprint – Container Shipping 1.0 have been taken from standard Business Process Model Notation (BPMN), but with some minor alterations to allow for the specific needs of the DCSA.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Start Event</td>
<td>The Start Event is the start of a process. Three Start Events are used in the DCSA Industry Blueprint 1.0. <strong>Timer:</strong> Used to indicate, that a process is triggered based on a specific timing. Can also be a timed point relative to the occurrence of a specific event. <strong>Message:</strong> Used to indicate, that a process is triggered by the reception of a message (e.g. a booking, a document or file) <strong>Other trigger:</strong> Used when the process is triggered by something other than the two previous or when the trigger is undefined or none-standardized.</td>
</tr>
<tr>
<td></td>
<td>Intermediate Event</td>
<td>The intermediate event signifies an occurrence, which takes place outside the process. This is often used to indicate, that something specific is happening between two activities. This outside event/occurrence needs to be concluded before the process can flow to the next activity.</td>
</tr>
<tr>
<td></td>
<td>End Event</td>
<td>The End Event indicates the final state or primary outcome of a process. <strong>Message:</strong> Used to indicate, that the final outcome of a process is a message sent. <strong>Error:</strong> Used to indicate, that the process outcome is to handle the process error outside of the defined process flow. <strong>Other outcome:</strong> Used when the process is concluded with another outcome than the two previous or when the result is undefined or none-standardized.</td>
</tr>
<tr>
<td></td>
<td>Linked Event</td>
<td>The Linked Event is used to indicate links between two or more processes. They are used to start or end a process, that triggers or is triggered by an other process. A Linked Event can either be a catch(start) or a throw(end). Catch and throw are drawn with a hollow and solid arrow respectively.</td>
</tr>
<tr>
<td></td>
<td>Activity</td>
<td>A generic term for the work performed. If the activity has been further disaggregated a &quot;+&quot; symbol at the bottom of the rounded rectangle will appear. This means that a process exist for the specific activity. If the rounded rectangle have a thinker edge, it is a global process meaning it is a process, which originates somewhere else in the process landscape.</td>
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**Elements and Icons**

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| ![Gateway Symbol] | **Gateway** | A gateway is used to control the divergence of sequence flows in a process. It will determine the branching of paths in a process. Three types of Gateways are used in the DCSA Industry Blueprint.  
**Exclusive Gateway** (empty square): The exclusive gateway is applied as an either/or statement. Used when only one of the alternative outcomes can occur in each instance of the process.  
**Inclusive Gateway** (square with a circle): Is applied when an and/or statement. Meaning that several outcomes can occur for a single instance of the process based on the judgement of the reader.  
**Parallel Gateway** (square with a cross): Used when more than one outcome happens simultaneously. All incoming flows will have to complete all outgoing alternatives. |
| ![Sequence Flow Symbol] | **Sequence Flow** | A flow is used to show the sequence in which activities is performed in a process. |
| ![Data Flow Symbol] | **Data Flow** | Used to illustrate the from or to an activity. The flows of information can either be in the form of data or messages. |
| ![Data Object Symbol] | **Data Object** | Data objects in the DCSA Industry Blueprint is defined as data or information, which is used or produced by a certain activity. The data associated with the data objects are considered to be internal, meaning that it is produced and owned by the carrier. Data Objects can appear as either catch (inputs) or throw (outputs) events. Catch and throw are drawn with a hollow and solid arrow respectively. |
| ![Message Symbol] | **Message** | A message is used to depict the transmission of information from one party to another. In the DCSA Industry Blueprint it has been defined, that messages are always used to illustrate external communication. This means communication between a carrier and a third party. |
Elements and Icons

The elements used in the Industry Blueprint – Container Shipping 1.0 have been taken from standard Business Process Model Notation (BPMN), but with some minor alterations to allow for the specific needs of the DCSA.

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<td><img src="Image" alt="Cargo released" /></td>
<td>Milestone</td>
<td>The milestone icons have been included in the Industry Blueprint 1.0 to indicate the completion or status change of significant occurrences. The milestones in the Industry Blueprint have been defined as: “A <strong>significant occurrence or change of status affecting the process flow of physical or immaterial equipment or documents.</strong>”</td>
</tr>
<tr>
<td><img src="Image" alt="Bill of Lading collected" /></td>
<td>Events</td>
<td>The event icons have been included in the Industry Blueprint 1.0 to indicate the completion or status change of less significant occurrences. They are defined as: “<strong>An occurrence in the process, which is a lower ranking contributor to a milestone</strong>”</td>
</tr>
<tr>
<td><img src="Image" alt="Inputs / Outputs" /></td>
<td>Swim lane</td>
<td>Swim lanes in the DSCA Industry Blueprint are used to group information belonging to specific categories. In the DSCA four different Swim lanes are used. <strong>Inputs / Outputs:</strong> Used to group information elements (messages and data objects) flowing in and out of the process. <strong>Carrier:</strong> Used to group process activities carried out by the carrier. <strong>Carrier milestones:</strong> Used to group milestones/events, which have been generated by or are in the carriers span of control. <strong>Conditional carrier milestones:</strong> Used to group milestones, that are not mandatory for the process, but have been generated by or are in the carriers span of control. <strong>Third party milestones:</strong> Used to group milestones, which are outside of the carriers span of control, yet potentially relevant for tracking or other purposes.</td>
</tr>
</tbody>
</table>
Industry Blueprint – Container shipping
Supporting documents & feedback

Process standards for the container shipping value chain.
Industry Blueprint 1.0 Documents

The Industry Blueprint 1.0 consists of a series of process maps, however a number of documents have been created to support the use and value of the maps. These documents should be seen as supporting elements, which can further increase understanding and insights gained from the process maps.

Industry Blueprint – Container Shipping 1.0

The process maps are the backbone of the Industry Blueprint 1.0. The multi-layered model allows the reader to drill down into each process to increase the level of detail.

Glossary of Terms

The glossary is used to support the reader with definitions and explanations of the terms and expressions used in the process maps. The primary function of the glossary is to make sure, that all readers are interpreting the terms used in the same way.

Process catalogue

Library of level 1 to level 3 processes contained within the Industry Blueprint including high level descriptions. Furthermore contributing carriers will have access to a cross reference to their original process documentation.

Reading guide (this document)

The current document is a reading guide, which is mandatory before starting to use the Industry Blueprint 1.0. This has been created to facilitate proper use and understanding of the Industry Blueprint 1.0, as well as the limitations of the Blueprint.
Contribute

The Industry Blueprint – Container Shipping 1.0 will continue to grow and improve. This will be done based on the ongoing collaboration with the industry.

Creation process

The Industry Blueprint – Container Shipping 1.0 has been made in collaboration with some of the world’s largest shipping companies. The collection and consolidation of process documentation was done by the DSCA.

The Industry Blueprint – Container Shipping 1.0 aims to create a representation of processes across all carriers, which have contributed to the process.

Suggested improvements

The Industry Blueprint – Container Shipping 1.0 will be a constantly evolving entity, which will change as processes and best practise across the industry change.

For this reason the DCSA is always interested in feedback, which can increase the quality of published work and drive standardization and digitalization going forward.

If you have any feedback or inputs, go to our webpage under “Contact”.

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